

# Claims

- [c1] A warning system for a host vehicle comprising:  
a first magneto-resistive sensor coupled to the host vehicle, said first magneto-resistive sensor sensing a first magnetic field variation in a first sensor area external to the host vehicle and generating a first sensor signal therefrom; and  
a controller coupled to the host vehicle receiving said first sensor signal, said controller generating a signal for activating a vehicle system in response to said first sensor signal.
- [c2] The system of claim 1 further comprising a vehicle bus receiving various vehicle control signals and generating therefrom a vehicle bus signal, wherein said controller generates said signal for activating said vehicle system as a function of said vehicle bus signal.
- [c3] The system of claim 2, wherein said vehicle bus receives at least one of a vehicle type information signal, a vehicle speed signal, an RPM signal, a heading of host vehicle signal, a location of vehicle signal, a host vehicle directional signal, a steering wheel angle signal, or a brake status signal and generates said vehicle bus signal as a

function of said at least one of said signals.

- [c4] The system of claim 1 further comprising a vehicle warning interface receiving said signal for activating said vehicle system from said controller, said vehicle warning interface activating said vehicle system in response to said signal for activating said vehicle system.
- [c5] The system of claim 4, wherein said vehicle system comprises at least one of a dashboard light, a light guide, an LED, a radio, a speaker, a pre-crash warning system, a heads-up display, or a passive restraint system.
- [c6] The system of claim 1 further comprising a second magneto-resistive sensor sensing a second magnetic field variation in a second sensor area external to the host vehicle and generating a second sensor signal therefrom.
- [c7] A system as recited in claim 1, wherein said sensor is coupled to at least one of an area near a rear of the vehicle, a trunk lid, a tailgate, a bumper, an area above tires of the vehicle, an area within vehicle side panels, or a rear portion of a roof of the vehicle.
- [c8] The system of claim 1, wherein said controller further comprises at least one of a signal conditioning algorithm, a temporal and signal strength correlation algorithm, a vehicle state definition algorithm, or a counter-

measure state definition algorithm for generating said signal for activating said vehicle system.

[c9] The system of claim 8, wherein said temporal and signal strength correlations algorithms are used in conjunction with a threshold comparison to assess a probability of an accident.

[c10] The system of claim 1, wherein said first sensor area coincides with at least a portion of a blind-spot of the host vehicle.

[c11] A method for operating a blind-spot detection system for a host vehicle comprising:  
sensing magnetic field changes caused by a target object in or near a vehicle blind-spot;  
generating a magnetic field signature as a function of said magnetic field changes;  
processing at least one algorithm as a function of said magnetic field signature; and  
activating a countermeasure in response to signals indicating a target vehicle in or near said vehicle blind-spot as a function of said processing of said at least one algorithm.

[c12] The method of claim 11 further comprising receiving a vehicle control signal;

generating a vehicle bus signal from said vehicle control signal; and  
processing said at least one algorithm as a function of said vehicle bus signal.

[c13] The method of claim 12, wherein said vehicle bus receives at least one of a vehicle type information signal, a vehicle speed signal, an RPM signal, a heading of host vehicle signal, a location of vehicle signal, a host vehicle directional signal, a steering wheel angle signal, or a brake status signal and generates said vehicle bus signal as a function of said at least one of said signals.

[c14] The method of claim 11, wherein processing further comprises determining required countermeasures necessary to reduce a likelihood of an accident.

[c15] The method of claim 11, wherein processing further comprises processing a magnetic signal conditioning algorithm for filtering and smoothing said magnetic field signature.

[c16] The method of claim 11, wherein processing further comprises processing a temporal and signal strength correlation algorithm for analyzing said magnetic field signature for determining a proximity and size of said target object.

[c17] The method of claim 11, wherein processing further comprises processing a vehicle state definition algorithm whereby a state of the host vehicle in relation to said target object is determined.

[c18] The method of claim 11, wherein processing further comprises processing a countermeasure state definition algorithm for determining whether a countermeasure is required and which countermeasure may be required.

[c19] A blind-spot detection system for a host vehicle comprising:  
a first magneto-resistive sensor coupled to a first rear area of the host vehicle, said first magneto-resistive sensor sensing a first magnetic field variation in a first sensor area coinciding at least partially with a first blind-spot of the host vehicle, said first magneto-resistive sensor generating a first sensor signal therefrom;  
a second magneto-resistive sensor coupled to a second rear area of the host vehicle, said second magneto-resistive sensor sensing a second magnetic field variation in a second sensor area coinciding at least partially with a second blind-spot of the host vehicle, said second magneto-resistive sensor generating a second sensor signal therefrom;  
a vehicle bus receiving various vehicle control signals

and generating therefrom a vehicle bus signal;  
a vehicle warning interface receiving a signal for activating said vehicle system, said vehicle warning interface activating said vehicle system in response to said signal for activating said vehicle system; and  
a controller coupled to the host vehicle receiving said first sensor signal, said second sensor signal, and said vehicle bus signal, said controller generating said signal for activating a vehicle system in response to said vehicle bus signal and at least one of said first sensor signal or said second sensor signal.

[c20] The system of claim 19, wherein said vehicle system comprises at least one of a dashboard light, a light guide, an LED, a radio, a speaker, a pre-crash warning system, or a passive restraint system.